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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Kenji Kawano

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FRISHAUF, HOLTZ, GOODMAN & CHICK, PC
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EXAMINER

WONG, TINA MEI SENG

ART UNIT

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2874

MAIL DATE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/566,735	Applicant(s) KAWANO ET AL.	
	Examiner Tina M. Wong	Art Unit 2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 April 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 February 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office action is responsive to Applicant's response submitted 23 April 2008.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S.

Patent 6,587,604 to Yamauchi.

In regards to claim 1, Yamauchi teaches a monitor photodetector-equipped optical modulator characterized by comprising an optical modulator (12) having a substrate (1), an optical waveguide (120), a center electrode (not shown), and at least one ground electrode (not shown), the substrate having an electro-optic effect (n-type InP substrate), the optical waveguide guides a light beam and is formed on one surface side of the substrate, and the center electrode and the at least one ground electrode having a voltage applied for modulating the light beam guided by the optical waveguide (Column 5), the optical waveguide (Figures 6 & 7) including an input optical waveguide, two branching optical waveguides, two interaction optical waveguides, a multiplexing optical waveguide, and an output optical waveguide, wherein the light beam is incident on the optical waveguide through the input optical waveguide, the two branching optical waveguides guide the light beam incident on the input optical waveguide while branching the light beam into two light beams, the two interaction optical waveguides modulate each phase of the two light beams by applying the voltage between the center electrode and the at least one

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ground electrode, the multiplexing optical waveguide multiplexes the two light beams which propagate through the two interaction optical waveguides, wherein the output optical waveguide is connected to the multiplexing optical waveguide through a multiplexing point of the multiplexing optical waveguide which multiplexes the two light beams, and a monitor photodetector (27) disposed outside the substrate except on the one surface side of the substrate which detects at least one of the two radiant light beams radiated from the multiplexing point inside the substrate of the optical modulator, the optical modulator characterized in that the output optical waveguide of the optical modulator secures a space for mounting the monitor photodetector such that at least one of optical axes of the radiant light beams in a substrate facet located on the output optical waveguide of the substrate and an edge portion of the output optical waveguide are separated (by the spot converter 10) from each other by a predetermined distance.

But Yamauchi fails to specifically state a high-order mode light beam generated by multiplexing phase-modulated two light beams in the multiplexing optical waveguide being radiated from the multiplexing point to an inside of the substrate as two radiant light beams while the high-order mode light beam hardly propagates through the output optical waveguide in the optical modulator. However, Yamauchi teaches all the necessary parts (the multiplexing waveguide and electrodes) and all the necessary mechanics (applying electric fields via voltage) for generating a high order mode light beam which hardly propagates through the output optical waveguide in the modulator. (Applicant's Admitted Prior Art: Specification, Pages 4-5)

Therefore, although not explicitly stated, it would have been obvious at the time the invention was made to a person having ordinary skill in the art that the high order mode light beam would

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have been generated by the invention disclosed by Yamauchi since Yamauchi teaches all the necessary components and mechanics required to produce the high order mode light beam.

In regards to claim 2, Yamauchi teaches all discussed above except for the limitation that the output optical waveguide is formed while a position of the multiplexing point in a direction orthogonal to a longitudinal direction of the substrate differs from a position of the edge portion of the output optical waveguide. However, the limitation is a method limitation in a device claim. Applicant is claiming a product, not a method of manufacturing the product. The patent being sought in the preceding claims is an end product that is met by the previously applied references.

In regards to claim 3, Yamauchi teaches the output optical waveguide to be a Mach-Zehnder type optical waveguide.

In regards to claim 4, Yamauchi teaches the monitor photodetector is provided near the substrate facet.

In regards to claim 5, Yamauchi teaches the monitor photodetector to be provided through a room.

In regards to claim 6, although Yamauchi does not specifically teach a mirror fixed near the end of the substrate facet to change the optical path, the use of mirrors to alter the intended optical path is commonly applied in the art. By changing the optical path, unwanted or wanted signals can be directed either away or towards the photodetector or any other component desired.

In regards to claims 7, 10 and 11, although Yamauchi does not specifically teach capillaries parallel or non parallel to a facet of the substrate, Yamauchi does teach a layered structure capable of directing light. Furthermore, since Applicant has not specifically claimed for the capillaries to be of a specific orientation (parallel/nonparallel), and it appears that either orientation work perform equally as well, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to place the capillaries in the direction most suited to the desired output response.

In regards to claim 8, Yamauchi teaches an optical power attenuation mechanism provided between the multiplexing point and the substrate facet on the output optical waveguide side of the substrate such that one of the two radiant light beams radiated from the multiplexing point of the multiplexing optical waveguide is attenuated while the radiant light beam propagates toward the substrate facet.

In regards to claim 9, Yamauchi teaches the monitor photodetector formed by a photodiode.

Response to Arguments

Applicant's arguments filed 23 April 2008 have been fully considered but they are not persuasive. Applicant argues Yamauchi fails to teach deforming the output waveguide in order to secure space for mounting a monitor photodetector (and therefore also alters the light beam); however, this argument does not reflect the claim language. Nowhere in the claim does Applicant claim for a deformed output waveguide.

Furthermore, Applicant argues Yamauchi fails to teach the photodetector to be disposed outside of the substrate except on one surface. However, the Examiner disagrees. As shown in Figure 7 of Yamauchi and as stated in the argument section presented by Applicant (Page 8, Line 17-19), Yamauchi teaches the monitor photodetector to be provided on the surface of the substrate and therefore meets the limitations of the photodetector being disposed outside (outside of the top side) of the substrate.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tina M. Wong whose telephone number is (571) 272-2352. The examiner can normally be reached on Monday-Friday 8:30-5:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tina M Wong/
Primary Examiner, Art Unit 2874